

REMARKS

The Office Action mailed May 6, 2010 has been reviewed and carefully considered. No new matter has been added.

Claims 1, 11, and 27-29 have been amended. Claim 33 has been cancelled without prejudice. Claims 1-32 are pending.

Claims 1-12 and 29-33 stand rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter. Of Claims 1-21 and 29-33, Claims 1, 11, 29, and 33 are independent Claims. As noted above, Claim 33 has been canceled. Remaining process Claims 1, 11, and 29 have been amended to each now recite, *inter alia*, “In a video encoder, a method...” (emphasis added). Support for the amendment may be found at least at Figure 6, element 604, and Figure 7, element 700, Figure 9A, element X27a, Figure 9B, element x27b, page 11, lines 7-10, and 13-14, and page 16, lines 15, 17, and 18, noting that Figures 9A and 9B show circuits in the encoder of Figure 7, and further noting that page 16, lines 15, 17, and 18 discloses an “encoding apparatus (encoder 604)”. Thus, process Claims 1, 11, and 29 recite that such processes are performed in a video encoder and, hence, are tied to the statutory class of apparatus, thus satisfying the first prong of the machine or transformation test set forth in *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008), which requires that a statutory process under 35 U.S.C. 101 must (1) be tied to another statutory category, or (2) transform underlying subject matter to a different state or thing. Moreover, we note that as per MPEP 2111.02(I), “[a]ny terminology in the preamble that limits the structure of the claimed invention must be treated as a claim limitation”. Accordingly, Claims 1, 11, and 29 are believed to satisfy the requirements of 35 U.S.C. 101 for at least the preceding reasons. As Claims 2-10, 12, and 30-32 directly or indirectly depend from Claims 1, 11, and 29, respectively, Claims 2-10, 12, and 30-32 are believed to satisfy the requirements of 35 U.S.C. 101 for at least the same reasons as Claims 1, 11, and 29. Thus, reconsideration of the rejection is respectfully requested.

Claims 27-28 stand rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter. Accordingly, Claim 27 has been amended to now recite “A non-transitory computer-usable medium having a computer-readable program code embodied therein for causing a computer system to perform the method of claim 1” (emphasis added). Similarly, Claim 28 has been amended to now recite “A non-transitory recording medium that stores a program, readable by a computer, for causing a computer system to perform the method of claim 1” (emphasis added). As noted in a

memo (hereinafter also referred to as the “Kappos’ memo”, a copy of which is enclosed herewith for the Examiner’s convenience) dated January 26, 2010 from David J. Kappos, Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office, “[a] claim drawn to such a computer readable medium that covers both transitory and non-transitory embodiments may be amended to narrow the claim to cover only statutory embodiments to avoid a rejection under 35 U.S.C. 101 by adding the limitation ‘non-transitory’ to the claim.” The memo further statutes that “[s]uch an amendment would typically not raise the issue of new matter, even the specification is silent because the broadest reasonable interpretation relies on the ordinary and customary meaning that includes signals per se.” Accordingly, Claims 27 and 28 are believed to satisfy the requirements of 35 U.S.C. 101 for at least the preceding reasons. Thus, reconsideration of the rejection is respectfully requested.

Moreover, the specification has been objected to as failing to provide a proper antecedent basis for the claimed subject matter. In view of the aforementioned Kappos memo, the corresponding amendments to Claims 27 and 28, as well as the existing disclosure provided by the instant specification, it is believed that the specification does, in fact, provide proper antecedent basis for the claimed subject matter. For example, amended Claims 27 and 28 are now more narrowly recited to encompass only non-transitory embodiments of the same. We further note that page 20, lines 6-13 of the instant specification disclose the following: “The present invention is operable in a number of general purpose or special purpose computing environments such as personal computers, general-purpose computers, server computers, hand-held devices, laptop devices, multiprocessors, microprocessors, set top boxes, programmable consumer electronics, network PCs, minicomputers, mainframe computers, distributed computing environments and the like to execute computer-executable instructions for performing a frame-to-frame digital video encoding of the present invention, which is stored on a computer readable medium.” Thus, in view of at least the preceding, it is believed that the specification satisfies the requirements of 37 CFR 1.75(d)(1) and MPEP 608.01(o). Hence, reconsideration of the rejection is respectfully requested.

Claims 1-32 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 20050276323 A1 to Martemyanov et al. (hereinafter “Martemyanov”) in view of U.S. Patent Publication No. 20010055338 to Machida (hereinafter “Machida”). The rejection is respectfully traversed.

The independent claims currently pending are Claims 1, 11, 13, 19, 26, and 29, as Claim 33 has been cancelled as noted above.

It is respectfully asserted that none of the cited references, either taken singly or in combination, teach or suggest the following limitations recited in Claim 1:

In a video encoder, a method for video encoding a block comprising:
combining a first prediction of a current block with a second prediction of a current block; wherein the first prediction of the current block is intra prediction and the second prediction of the current block is inter prediction.

Moreover, it is respectfully asserted that none of the cited references, either taken singly or in combination, teach or suggest the following limitations recited in Claim 13:

A video encoder for encoding blocks within frames of a sequence of two dimensional images, the encoder comprising: an intra-frame prediction block being operatively connected to a combining unit and for outputting a first intra prediction of a block; and an inter-frame prediction block being operatively connected to the combining unit and for outputting a first inter prediction of the block; wherein the combining unit is adapted to combine the first intra prediction and the first inter prediction and to output a hybrid intra-inter coded block.

Further, it is respectfully asserted that none of the cited references, either taken singly or in combination, teach or suggest the following limitations recited in Claim 29: "In a video encoder, a method for video encoding a block comprising: combining a first prediction type for a current block with a second prediction type for a current block; wherein the combination of the first prediction type and the second prediction type forms a hybrid prediction type."

Against the aforementioned limitations of Claims 1, 13, and 29, the Examiner cited Martemyanov, reasoning as follows:

As per claims 1, 13, and 29 Martemyanov teaches a method for video encoding a block comprising: selecting (see fig. 3 element 54) a first prediction of a current block (see fig. 3 element 5) with a second prediction of a current block (see fig. 3 element 52) and wherein the first prediction of the current block is intra prediction and the second prediction of the current block is inter prediction.

However, we initially note that none of the aforementioned claims 1, 13, and 29 even recite the word “selecting”. Hence, the Examiner use of the cited references seems misplaced.

Moreover, while cited Figure 3 of Martemyanov is directed to a macroblock encoding unit, we further note that such macroblock encoding unit in Martemyanov is not disclosed as having the capability to combine an intra prediction and an inter prediction as essentially recited in Claims 1, 13, and 29, nor does the macroblock encoding unit of Figure 3 even have the means for making such combination, as no combiner or similar functioning device is shown in Figure 3 as receiving both of such disparate types of predictions, namely an intra prediction and an inter prediction. For example, element 54 of Figure 3 of Martemyanov, namely the element referred to as “choosing macroblock type and encoding settings”, functions as its name suggests, and performs no combining or similar functions as recited in Claims 1, 13, and 29. This is because only one type of prediction is chosen for a macroblock (see, e.g., Martemyanov, para. [0038], “[e]ach macroblock can be intra or inter coded”(emphasis added)) as per conventional encoding schemes and, hence, no combining of intra prediction and inter prediction are even remotely suggested, in contrast to the subject matters of Claims 1, 13, and 29.

Of course, none of this is surprising, as even the Examiner has admitted that “Martemyanov fails to teach combining a first prediction of a current block with a second prediction of a current block”.

Hence, the Examiner has relied upon Machida, reasoning that “Machida teaches teach [sic] combining a first prediction of a current block with a second prediction of a current block (see fig. 3 element 315 and paragraph [0049]”. However, this teaching of Machida can simply be considered to be similar to bi-prediction, where TWO PREDICTIONS OF THE SAME TYPE ARE COMBINED. That is, in Machida, two predictions of the same type (inter OR intra) are combined in the coding apparatus of Figure 3. For example, an intra/inter judging means 304 “judg(es)

whether the macro block of the present frame is processed by intra-coding or inter-coding” (see, e.g., Machida, para. [0050]). To that end, we respectfully point out that such intra/inter judging means 304 in Machida does NOT include an output judgment that indicates a combination of intra-coding and inter-coding for the same macroblock or a hybrid prediction type or a hybrid intra-inter coded block. Rather, the only two output judgments by the intra/inter judging means 304 of Machida are intra-coding OR inter-coding.

Moreover, paragraph [0045] of Machida, which is directed to Figure 3 thereof, discloses that “[a] third embodiment of the invention is a coding method of moving image signal for inter-coding the present processing pixel block when the correlation is high between two or more predicted images compensated of motion by two or more motion vectors, and intra-coding the present processing pixel block when the correlation is low between two or more predicted images”. Hence, Machida codes a present processing pixel block either using inter coding OR intra coding, depending on the correlation to predicted images.

Hence, similar to Martemyanov, Machida fails to teach or even remotely suggest combining an intra prediction and an inter prediction as recited in independent Claims 1, 13, and 29. Given that bi-prediction involves two (inter) predictions of the same type and that Machida involves two predictions of the same type, it would actually seem counterintuitive, particularly in consideration of the preceding, to try and combine two different types of prediction such as inter prediction and intra prediction as recited in the pending independent claims.

Thus, neither Martemyanov nor Machida, taken singly or in combination, teach or suggest all of the above reproduced limitations of Claims 1, 13, and 29. Accordingly, Claims 1, 13, and 29 are patentably distinct and non-obvious over Martemyanov and Machida for at least the preceding reasons.

We will now address independent Claims 11, 19, and 26. At the onset, we note that independent Claims 11, 19, and 26 are similar to previously argued independent Claims 1, 13, and 29 in that all such claims involve encoding by combining an intra prediction and an inter prediction. Accordingly, given that the same references were cited against all of these claims, we respectfully argue that Claims 11, 19, and 26 are patentably distinct and non-obvious over the cited references for at least the same reasons as set forth above regarding Claims 1, 13, and 29. Nonetheless, we will specifically address Claims 11, 19, and 26 as follows.

It is respectfully asserted that none of the cited references, either taken singly or in combination, teach or suggest the following limitations recited in Claim 11:

In a video encoder, a method of video encoding for compressing and encoding frames of a two-dimensional image sequence for transmission comprising: dividing a frame of the image sequence into blocks, selecting blocks and encoding the selected blocks in a bi-predictive hybrid intra-inter encoding mode into a bitstream for transmission.

Moreover, it is respectfully asserted that none of the cited references, either taken singly or in combination, teach or suggest the following limitations recited in Claim 19:

A video encoder for compressing and encoding frames of a two dimensional image sequence for transmission, the video encoder being adapted to select blocks from at least one frame of the image sequence and to encode the selected blocks by combining a first prediction and a second prediction, wherein at least the first prediction is an intra prediction of the current block.

Further, it is respectfully asserted that none of the cited references, either taken singly or in combination, teach or suggest the following limitations recited in Claim 26:

A multimedia terminal, comprising a video encoder adapted to encode a digital video sequence using motion compensated prediction, said digital video sequence comprising a number of frames, wherein the video encoder is adapted to select blocks from at least one frame of the image sequence and to encode the selected blocks; wherein encoding each of the blocks includes combining a first prediction and a second prediction, wherein at least the first prediction is an intra prediction of the current block.

Against the aforementioned limitations of Claims 11, 19, and 26, the Examiner cited Martemyanov, reasoning as follows:

As per claims 11, 19 and 26 Martemyanov teaches a method of video for compressing and encoding frames of a two-dimensional image sequence for transmission (see figs. 2-3 element 42) comprising: dividing a frame of the image sequence into blocks (see fif.3 [sic – fig. 3] elements 50, 52 and paragraph [0041]), selecting blocks and encoding the selected blocks (see fig.3 elements 54, 70 and paragraph [0044-0050] in intra-inter encoding mode into a bitstream for transmission.

While cited Figure 3 of Martemyanov is directed to a macroblock encoding unit, we note that such macroblock encoding unit in Martemyanov is not disclosed as having the capability to combine an intra prediction and an inter prediction or use a bi-predictive hybrid intra-inter encoding mode as essentially recited in Claims 11, 19, and 26, nor does the macroblock encoding unit of Figure 3 even have the means for making such combination and hence using such hybrid intra-inter encoding mode, as no combiner or similar functioning device is shown in Figure 3 as receiving both of such disparate types of predictions, namely an intra prediction and an inter prediction. For example, element 54 of Figure 3 of Martemyanov, namely the element referred to as “choosing macroblock type and encoding settings”, functions as its name suggests, and performs no combining or similar functions as essentially recited in Claims 11, 19, and 26. This is because only one type of prediction is chosen for a macroblock (see, e.g., Martemyanov, para. [0038], “[e]ach macroblock can be intra or inter coded”(emphasis added)) as per conventional encoding schemes and, hence, no combining of intra prediction and inter prediction are even remotely suggested, in contrast to the subject matters of Claims 1, 13, and 29.

Of course, none of this is surprising, as even the Examiner has admitted that “Martemyanov fails to explicitly teach encoding the selected blocks in a bi-predictive hybrid intra-inter encoding mode into a bitstream for transmission”.

Hence, the Examiner has relied upon Machida, reasoning that “Machida teaches encoding the selected blocks in a bi-predictive hybrid intra-inter encoding mode into a bitstream for

transmission (see fig. 3 elements 304 and 307 and abstract and paragraph [0045] [0050-0052]). However, this teaching of Machida can simply be considered to be similar to bi-prediction, where TWO PREDICTIONS OF THE SAME TYPE ARE COMBINED. That is, in Machida, two predictions of the same type (inter OR intra) are combined in the coding apparatus of Figure 3. For example, an intra/inter judging means 304 "judg[es] whether the macro block of the present frame is processed by intra-coding or inter-coding" (see, e.g., Machida, para. [0050]). To that end, we respectfully point out that such intra/inter judging means 304 in Machida does NOT include an output judgment that indicates a combination of intra-coding and inter-coding for the same macroblock or a hybrid prediction type or a hybrid intra-inter coded block. Rather, the only two output judgments by the intra/inter judging means 304 of Machida are intra-coding OR inter-coding.

Moreover, cited paragraph [0045] of Machida, which is directed to Figure 3 thereof, discloses that "[a] third embodiment of the invention is a coding method of moving image signal for inter-coding the present processing pixel block when the correlation is high between two or more predicted images compensated of motion by two or more motion vectors, and intra-coding the present processing pixel block when the correlation is low between two or more predicted images". Hence, Machida codes a present processing pixel block either using inter coding OR intra coding, depending on the correlation to predicted images.

Hence, similar to Martemyanov, Machida fails to teach or even remotely suggest combining an intra prediction and an inter prediction as recited in independent Claims 11, 19, and 26. Given that bi-prediction involves two (inter) predictions of the same type and that Machida involves two predictions of the same type, it would actually seem counterintuitive, particularly in consideration of the preceding, to try and combine two different types of prediction such as inter prediction and intra prediction as recited in the pending independent claims.

Thus, neither Martemyanov nor Machida, taken singly or in combination, teach or suggest all of the above reproduced limitations of Claims 11, 19, and 26. Accordingly, Claims 11, 19, and 26 are patentably distinct and non-obvious over Martemyanov and Machida for at least the preceding reasons.

The failure of an asserted combination to teach or suggest each and every feature of a claim remains fatal to an obviousness rejection under 35 U.S.C. § 103. Section 2143.03 of the MPEP requires the "consideration" of every claim feature in an obviousness determination. To

render a claim unpatentable, however, the Office must do more than merely "consider" each and every feature for this claim. Instead, the asserted combination of the patents must also teach or suggest *each and every claim feature*. See *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974) (emphasis added) (to establish *prima facie* obviousness of a claimed invention, all the claim features must be taught or suggested by the prior art). Indeed, as the Board of Patent Appeal and Interferences has recently confirmed, a proper obviousness determination requires that an Examiner make "a searching comparison of the claimed invention - *including all its limitations* - with the teaching of the prior art." See *In re Wada and Murphy*, Appeal 2007-3733, citing *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) (emphasis in original). "If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious" (MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)).

Hence, Claims 1, 11, 13, 19, 26, and 29 are patentably distinct and non-obvious over the cited references for at least the reasons set forth above.

"If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious" (MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)).

Claims 2-10 and 27-28, 12, 14-18 and 25, 20-24, and 30-32 directly or indirectly depend from Claims 1, 11, 13, 19, 26, and 29, respectively, and thus include all the limitations of Claims 1, 11, 13, 19, 26, and 29, respectively. Accordingly, Claims 2-10 and 27-28, 12, 14-18 and 25, 20-24, and 30-32 are patentably distinct and non-obvious over the cited references for at least the reasons set forth above with respect to Claims 1, 11, 13, 19, 26, and 29, respectively.

Reconsideration of the rejection is respectfully requested.

In view of the foregoing, Applicants respectfully request that the rejections of the claims set forth in the Office Action of May 6, 2010 be withdrawn, that the pending claims be allowed, and that the case proceed to early issuance of Letters Patent in due course.

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It is believed that no further additional fees or charges are currently due. However, in the event that any additional fees or charges are required at this time in connection with the application, they may be charged to applicants' Deposit Account No. 07-0832.

Respectfully submitted,

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Date: July 1, 2010

Subject Matter Eligibility of Computer Readable Media

The United States Patent and Trademark Office (USPTO) is obliged to give claims their broadest reasonable interpretation consistent with the specification during proceedings before the USPTO. *See In re Zletz*, 893 F.2d 319 (Fed. Cir. 1989) (during patent examination the pending claims must be interpreted as broadly as their terms reasonably allow). The broadest reasonable interpretation of a claim drawn to a computer readable medium (also called machine readable medium and other such variations) typically covers forms of non-transitory tangible media and transitory propagating signals *per se* in view of the ordinary and customary meaning of computer readable media, particularly when the specification is silent. *See* MPEP 2111.01. When the broadest reasonable interpretation of a claim covers a signal *per se*, the claim must be rejected under 35 U.S.C. § 101 as covering non-statutory subject matter. *See In re Nuijten*, 500 F.3d 1346, 1356-57 (Fed. Cir. 2007) (transitory embodiments are not directed to statutory subject matter) and *Interim Examination Instructions for Evaluating Subject Matter Eligibility Under 35 U.S.C. § 101*, Aug. 24, 2009, p. 2.

The USPTO recognizes that applicants may have claims directed to computer readable media that cover signals *per se*, which the USPTO must reject under 35 U.S.C. § 101 as covering both non-statutory subject matter and statutory subject matter. In an effort to assist the patent community in overcoming a rejection or potential rejection under 35 U.S.C. § 101 in this situation, the USPTO suggests the following approach. A claim drawn to such a computer readable medium that covers both transitory and non-transitory embodiments may be amended to narrow the claim to cover only statutory embodiments to avoid a rejection under 35 U.S.C. § 101 by adding the limitation "non-transitory" to the claim. *Cf. Animals – Patentability*, 1077 Off. Gaz. Pat. Office 24 (April 21, 1987) (suggesting that applicants add the limitation "non-human" to a claim covering a multicellular organism to avoid a rejection under 35 U.S.C. § 101). Such an amendment would typically not raise the issue of new matter, even when the specification is silent because the broadest reasonable interpretation relies on the ordinary and customary meaning that includes signals *per se*. The limited situations in which such an amendment could raise issues of new matter occur, for example, when the specification does not support a non-transitory embodiment because a signal *per se* is the only viable embodiment such that the amended claim is impermissibly broadened beyond the supporting disclosure. *See, e.g., Gentry Gallery, Inc. v. Berkline Corp.*, 134 F.3d 1473 (Fed. Cir. 1998).

Date: 1/26/10

David J. Kappos

Under Secretary of Commerce for Intellectual Property and
Director of the United States Patent and Trademark Office